INDEX.

PAGE

Acetylene Industry, The—
By George T. Holloway 77, 102

Allen, Grant—
Obituary Notice of 277

Anderson, Sir William—
Obituary Notice of 37

Aneroid, Watkin Mountain—
Note on 64

Antarctic Expedition, The National—
Note on... 83

Anthropological Data, On the Treatment and Utilization of—
By Arthur Thomson.
I. Colour 25
II. The Hair 73
III. Racial Proportions 125
IV. Height 169
V. Cranial Form 217
VI. Facial Form 266

Antoniadi, E. M.—
Considerations on the Planet Saturn ... 9
Clouds 202

Apples, The Discoloration of Cut—
By G. Clarke Nuttall 124

Atmospheric Corona, Triple—
By Rev. Samuel Barber 67

Backhouse, T. W.—
Letter on Some Suspected Variable Stars ... 227

Bacon, Rev. John M., F.R.A.S.—
Sound Reflexion and Refraction 193

Barber, Rev. Samuel—
Triple Atmospheric Corona 67

Battersby, Frances I.—
Letter on The Legend of Lough Derevaragh... 132

Beetle, The Ovipositor of a—
By Walter Wesché 18

Ben Nevis, and its Observatory—
By William S. Bruce 198, 231

PAGE

Besley, Walter E.—
Letter on Mira Ceti 38

Biological Survey, Recent Work of the United States—
By W. Mark Webb 254

Birds, The Bad Language of Wild—
By Charles A. Witchell 28

Birds, The Love-Gifts of—
By Charles A. Witchell 76
Letter on ; by Charles A. Witchell ... 109

Birds, The Shooting of Rare—
Letter on ; by C. E. Martin 38

Books, Reviews of—

Algebra, Introduction to. By G. Chrystal 15
Analysis, Qualitative, Introduction to the Science and Practice of.—Inorganic. By Chapman Jones 15
Animals, The Play of : a Study of Animal Life and Instinct. By Prof. Karl Groos 34
Astronomy, A History of. By Arthur Berry ... 111
Astronomy, A New. By David P. Todd 181
Astronomy, An Introduction to Stellar. By W. H. S. Monck 181
Astronomy, Laboratory Manual on. By Mary E. Byrd 135
Astronomy, Recent Advances in. By A. H. Fison 110
Australia, The Native Tribes of Central. By Baldwin Spencer and F. I. Gillen 81
Australian Bush, In the, and on the Coast of the Coral Sea. By Richard Semon... 207
Australian Association for the Advancement of Science, Report of 281
Bacon or Shakespeare? An Historical Enquiry. By E. Marriott 257
Bird Life in an Arctic Spring. The Diaries of Dan Meinertzhagen and R. P. Hornby 281
Birds (Cambridge Natural History). By A. H. Evans 281
Birds, A List of British, belonging to the Humber District. By John Cordeaux 255
Birds, A List of European. By Heatley Noble ... 35
Birds, British and Edible, Charts of 35
Birds, Cries and Call Notes of Wild. By C. A. Witchell 282
Birds, Illustrated Manual of British. By Howard Saunders 279
Birds of Breconshire. By E. Cambridge Phillips... 280
Birds of the British Empire. By Dr. W. T. Greene 14
Birds of the British Islands. Drawn and described by John Duncan 111
Birds, The Farmer and the. By Edith Carrington 82
Birds, the Structure and Classification of. By Frank E. Beddard 60

683992

Books, Reviews of—

PAGE

Bird World, Wonders of the. By R. Bowdler Sharpe 257
Booksellers and Bibliophiles, Manual and Directory for 1899 183
Botany, An Elementary Text Book of. By Sidney H. Vines 134
Botany, A Text Book of. By J. M. Lowson ... 181
Bright, Sir Charles Tilston, Life Story of. By Edward and Charles Bright 134
Buds and Stipules, On. By Sir John Lubbock ... 159
Buildings, The Internal Wiring of. By H. M. Leaf 181
Chemical Analysis, Qualitative and Quantitative. By William Briggs and R. W. Stewart 112
Chemistry, A Select Bibliography of, 1492-1897. By Henry Carington Bolton 256
Chemistry, First Stage Inorganic (Practical). By F. Beddow 16
Chemistry for Photographers. By C. F. Townsend 160
Chemistry for Schools. By C. Haughton Gill ... 35
Chemistry, Outlines of Industrial. By Dr. Frank Hall Thorp 110
Chemistry, Practical Inorganic, for Advanced Students. By Chapman Jones 58
Chemistry, Scientific, A Short History of the Progress of, in our own Times. By Professor W. A. Tilden 256
Clocks and Watches, Old, and their Makers. By F. J. Britten 159
Coleridge's Table Talk... 183
Constellations, Primitive, of the Greeks, Phœnicians, and Babylonians. By Robert Brown 182
Corona and Coronet. By Mabel Loomis Todd ... 159
Creation Records. By George St. Clair 34
Cressy and Poictiers, or the Story of the Black Prince's Page. By J. G. Edgar 112
Cygni, The Parallaxes of 61^1 and 61^2. By Dr. Herman Davis 15
Diary and Naval Handbook for 1900 282
Diet and Food. By Alex. Haig 83
Earth Sculpture, or the Origin of Land Forms. By Prof. James Geikie 35
Eclipse of the 22nd January, 1898, Observations during the, taken at Dumraon, Behar 258
Eclipse, the Indian, 1898. Edited by E. W. Maunder 207
Eclipses, Remarkable. By W. T. Lynn 15
Economy, Social and Political. By Thos. Judge ... 15
Electricians' Pocket Book and Diary. Edited by H. T. Crewe 112
Electricity, the Discharge of, through Gases. By J. J. Thomson 111
Energy and Heat. By John Roger 280
English Industrial History, Landmarks in. By George Townsend Warner 110
English, The Art of Writing. By J. M. D. Meiklejohn 160
Epitaphs, Curious. Compiled by William Andrews 183
Essex Naturalist. Edited by Wm. Cole... ... 182
Faraday, Michael, his Life and Work. By Prof. Sylvanus P. Thompson 59
Fauna, History of European. By R. F. Scharff ... 280
Ferments, the Soluble, and Fermentation. By J. Reynolds Green 279
Funafuti: or Three Months on a Remote Coral Island. By Mrs. Edgeworth David 257
Geography, International. By Seventy Authors. Edited by Hugh Robert Mill... 279

PAGE

Geology, Aids in Practical. By Prof. Grenville A. J. Cole 34
Geology, An Intermediate Text Book of. By Charles Lapworth 111
Geology, First Lessons in Modern. By the late A. H. Green 112
Geology, Skertchley's Elements of. Revised by Dr. James Monckman 82
Geology, The Principles of Stratigraphical. By J. E. Marr 82
Girls' Education in England, The Renaissance of. By Alice Zimmern 112
Haunts and Hobbies of an Indian Official. By Mark Thornhill 256
Hunterian Oration, The. By Sir Wm. MacCormac 230
Insects (Cambridge Natural History). By David Sharp 258
Insects; Their Structures and Life. By George H. Carpenter 230
Insects, True Tales of the. By L. N. Badenoch ... 257
Kant on Education. Translated by Annette Churton 134
Lantern Slides, How to Make. By S. L. Coulthurst 16
Lapland, Through Arctic. By Cutcliffe Hyne ... 82
Legislation, Journal of the Society of Comparative. Vol. I. 135
Life, The Science of. By J. Arthur Thomson ... 82
Link, The Last. By Ernest Haeckel 60
Literary and Debating Societies, Handbook for. By Laurence M. Gibson 15
London in the Reign of Victoria (1837-1897). By G. Laurence Gomme 59
London University Guide and University Correspondence Calendar... 59
Lowell Observatory, Annals of the. Vol. I., Observations of the Planet Mars during the Opposition of 1894-5, made at Flagstaff, Arizona. By Percival Lowell 159
Mammals, The Geography of. By William L. Sclater 281
Man, from Matter to—A New Theory of the Universe. By A. Redcote Dewar 35
Man; Past and Present. By A. K. Keane ... 229
Mechanics, Practical. By S. H. Wells 15
Moon, Eclipses of the, in India. By Robert Sewell 14
Organism, the Living. By Alfred Earl 59
Palestine and Syria, My Tour in. By F. H. Deverell 208
Photograms of 1898 16
Photograms of 1899 279
Photography, Early Work in. By W. E. Henry... 208
Photo-Micrography. By Edmund J. Spitta ... 135
Physics, A History of. By Florian Cajori ... 181
Physics, An Introduction to Practical. By D. Rintoul 15
Physics: Experimental and Theoretical. Vol. I. By R. H. Jude 256
Physics, Practical Work in. Part IV. Magnetism and Electricity. By W. C. Woollcombe ... 112
Process Year Book for 1899 279
Provident Societies and Industrial Welfare. By E. W. Braybrook 16
Quœro. By James H. Keeling 82
Rain, River and Evaporation, Results of. By H. C. Russell 258
Rambles with Nature Students. By Mrs. Brightwen... 230
Reliquary and Illustrated Archæologist, The. Volume for 1898 16

PAGE

Books, Reviews of—

Retrospect of Eight Decades, A. By Rev. Edward L. Berthon 208
River Development, as illustrated by the Rivers of North America. By Prof. I. C. Russell ... 160
Romano-British Settlement at Chigwell, Essex, Notes upon. By J. Chalkley Gould 281
Rousden Observatory, Devon; variable Star notes No. 4: R. Cygni and X. Cygni. By Sir C. E. Peek 183
Russian Province of the North, A. By Alexander Platonovich Engelhardt 230
Science, Early chapters in. By Mrs. W. Awdry 257
Science, the Groundwork of. By St. George Mivart 35
Scientific Roll and Magazine of Systematized Notes, conducted by Alexander Ramsay 182
Sea, The Resources of the. By W. C. McIntosh ... 160
Seismology. By John Milne 59
Siddhánta-Darpana, a Treatise on Astronomy ... 257
Skiagraphic Atlas. By John Poland 35
Smithsonian Institution: Annual Report of the Board of Regents for 1896 111
Smithsonian Institution: Report by S. P. Langley for the Year ending June 30th, 1898 182
Sport, The Encyclopœdia of. By the Earl of Suffolk and Berkshire, Hedley Peek, and F. G. Aflalo 89
Stars and Telescopes. By David P. Todd ... 256
Stonyhurst College Observatory: Results of the Meteorological and Magnetic Observation for 1898 182
Telephones, their Construction and Fitting. By F. C. Allsop 256
Truth and Error, or the Science of Intellection. By J. W. Powell 257
Voice that is Still, The Sound of a. By Archie Campbell 135
Volcanoes: Their Structure and Significance. By T. G. Bonney 134
Way the World Went Then, The. By Isabella Barclay 111
Weather Lore. By Richard Inwards 15
West African Studies. By Mary H. Kingsley ... 112
Wheat Problem, The. By Sir William Crookes ... 280
Whitaker's Almanack, 1899 35
Zoology, Elementary Practical. By Frank E. Beddard 35
Zoology, Practical. By the late A. Milnes Marshall and the late C. Herbert Hurst 257

Brown, Miss Elizabeth—

Obituary Notice of 85

Bruce, William S., F.R.S.G.S.—

Ben Nevis and its Observatory ... 198, 231

Buckland Fish Museum—

Note on 36

Bunsen, Prof. Robert Wilhelm Eberard—

Obituary Notice of 206

Burns, Gavin J., B.Sc.—

Distribution of Stars in Space 152
Letter on 227
Is the Stellar Universe Finite? 248

PAGE

Chess Column—

By C. D. Locock ... 23, 47, 71, 95, 119, 143, 167, 191, 215, 239, 263, 287

Clarke, W. G.—

The Icknield Way in Norfolk and Suffolk ... 43

Clouds—

By James Quick 103
By E. M. Antoniadi 202

Coins, The Zodiacal, of the Emperor Jahāngīr—

By E. Walter Maunder 155

Cole, Grenville A. J., M.R.I.A., F.G.S.—

Secrets of the Earth's Crust—

Introduction 31
I. The Unseen Core 32
II. The Oldest Fauna of the Globe ... 79
III. The Makers of Flint 128
Letter on the Origin of Flint ... 180
IV. A Caldron of the Rocks 186
V. The Great Earth-Mill 235
VI. The Coming of Man 268

Comets and Meteors, Notes on—

By W. F. Denning 22, 46, 70, 93, 117, 141, 166, 189, 213, 237, 262, 286

Cooke, John H., F.L.S., F.G.S.—

Microscopy 22, 45, 70, 92, 118, 140, 165, 190, 214, 238, 261, 285

Cordeaux, John—

Obituary Notice of 228

Crommelin, A. C. D.—

Letter on The Planet DQ 37

Crouch, C.—

Letter on Memory without Reason 228

Cygni, 61—

Letter on; by W. H. S. Monck 39

Cygni, S. S.—

Letter on; by David Flanery ... 226, 253

DQ, The Planet—

Letter on; by A. C. D. Crommelin 37

DQ, Witt's Planet—

By Edward C. Pickering 9

Davison, Charles, Sc.D., F.G.S.—

The Hereford Earthquake of 1896 121

Denning, W. F., F.R.A.S.—

Notes on Comets and Meteors 22, 46, 70, 93, 117, 141, 166, 189, 213, 237, 262, 286

Derevaragh Lough, The Legend of—

Letter on; by Frances I. Battersby ... 132

Dunkin, Edwin, F.R.S.—

Obituary Notice of 13

XUM

PAGE

Earth's Crust, Secrets of the—
By Grenville A. J. Cole.
Introduction 31
I. The Unseen Core 32
II. The Oldest Fauna of the Globe ... 79
III. The Makers of Flint 128
IV. A Caldron of the Rocks 186
V. The Great Earth-Mill 235
VI. The Coming of Man 268

Earthquake, The Hereford, of 1896—
By Charles Davison 121

Eclipse, Total Solar of 1900—
Note on 228

Editorial 265

Electricity as an Exact Science—
By Howard B. Little.
I. Tradition, etc. 19
II. Units and Measurements 64
III. Arbitrary Assumptions and Expressions 100
IV. Experience, its Value, and its Danger 163
V. Electrical Reasoning and Incontrovertible Electrical Fact 211
VI. The Relation of Modern Electrical Practice to its History, its Units, and its Reasoning 246

Eros, The Planet (DQ 433)—
By Edward C. Pickering 62

Fairy Rings—
By A. B. Steele 197

Flanery, David—
Letter on Variable Stars 17
Letter on Mira Ceti 109
Letter on S. S. Cygni... 226
Letter on R. Leonis, Mira, and S. S. Cygni... 253

Flint, The Origin of—
Letter on; by Grenville A. J. Cole ... 180

Flower, Sir William—
Obituary Notice of 178

Fly, The Teeth of the Dung—
By Walter Wesché 18

Fly, The Teeth on the Labella of the Blow—
By Walter Wesché 164

Foster's, Sir Michael, Presidential Address to the British Association, September 13th, 1899 219

Fowler, A., F.R.A.S.—
The Face of the Sky 23, 47, 71, 94, 119, 142, 167, 191, 214, 239, 263, 287

Fowler, Sir John—
Obituary Notice of 37

Frankland, Sir Edward—
Obituary Notice of 206

PAGE

Fry, The Rt. Hon. Sir Edward, D.C.L., LLD., F.R.S., and Agnes—
The Mycetozoa, and Some Questions which they Suggest 1, 56, 114, 161, 194, 241, 271

Galileo's Tower at Florence—
By W. Alfred Parr 157

Galton, Sir Douglas—
Obituary Notice of 85

Geological Catastrophe, What is a?—
By N. A. Graydon 113

Godden, William—
Letter on the Sunspot Period 18

Gore, J. E., F.R.A.S.—
Some Suspected Variable Stars 176, 200, 233
Letter on The Distribution of Stars in Space 180

Graydon, N. A.—
What is a Geological Catastrophe? 113

Green, Jos. F., F.Z.S.—
Letter on Locusts in England 84
Letter on Honeysuckle Flowering in a Strange Place 179

Grimshaw, Percy H., F.E.S.—
Mosquitoes and Malaria 49

Grut, P. de Jersey—
Letter on Trees Struck by Lightning ... 277

Guadalquiver, Two Months on the—
By Harry F. Witherby.
I. The River 6
II. The Marismas 51
III. Reeds and Rushes 183
IV. Scrub and Wood 222
V. Flowery Plains and Bustards. List of Birds obtained and observed ... 272

Hampton, The Lord—
Letter on Tree Struck by Lightning ... 252

Heavens, An Anglo-Saxon Story of the—
By E. Walter Maunder 106

Hippalus and its Surroundings—
By E. Walter Maunder 275

Holloway, George T., Assoc. R.Coll.Sc., F.I.C.—
The Acetylene Industry 77, 102

Honeysuckle Flowering in a Strange Place—
Letter on; by Jos. F. Green 179

Hydrogen, Liquefaction of—
Note on 158

Icknield Way, The, in Norfolk and Suffolk—
By W. C. Clarke 43

Iveagh, Lord, and the Jenner Institute—
Note on 12

PAGE

Ivory, Mammoth—
By R. Lydekker 67

Jenner, Sir William—
Obituary Notice of 37

Karkinokosm, The, or World of Crustacea—
By Rev. T. R. R. Stebbing.
VII. The Box Crustacea 29
VIII. The Door-Shell Crustacea 87
IX. La Dignité du Chez-Soi 137
X. Weapons and Wiles 171
XI. Taste and Try 224
XII. A Breath of Water 282

Kaulbars, Lt.-General Baron N.—
Letter on Tree Struck by Lightning ... 227

Keane, A. K.—
Letter on "Man; Past and Present" ... 251

Kodaikanal, The New Observatory at—
Letter on; by R. de Beaurepaire Louvagny 16

Leonids, The Shower of, in 1899—
By W. F. Denning 286

Leonis, R.—
Letter on; by David Flanery 253

Lightning, Tree Struck by—
Letter on; by A. C. 18
Letter on; by Howard B. Little 38
Letter on; by Baron N. Kaulbars 227
Letter on; by Lord Hampton 252
Letter on; by P. de Jersey Grut 277

Little, Howard B.—
Electricity as an Exact Science.
I. Tradition, etc. 19
II. Units and Measurements 64
III. Arbitrary Assumptions and Expressions 100
IV. Experience, its Value, and its Danger 163
V. Electrical Reasoning and Incontrovertible Electrical Fact 211
VI. The Relation of Modern Electrical Practice to its History, its Units, and its Reasoning 246
Letter on Tree Struck by Lightning 38
Letter on The Need for a better Interchange of Scientific Thought 108

Locock, C. D., B.A.—
Chess Column ... 23, 47, 71, 95, 119, 143, 167, 191, 215, 239, 263, 287

Locusts in England—
Letter on; by Jos. F. Green 84

Longitude of the Earth's Perihelion—
Letter on; by "Perplexed" 62

Louvagny, R. de Beaurepaire, S.J.—
Letter on The New Observatory at Kodaikanal 16

PAGE

Lydekker, R.—
Mammoth Ivory 67
Mother-of-Pearl and its Sources 97
Sponges and the Sponge Trade 145
A Contrast in Noses 174
Shells as Ornaments, Implements, and Articles of Trade 242

MacDowall, Alex. B., M.A.—
The Fluctuations of Rainfall 54
London Summers near Sunspot Minima ... 209

"Man: Past and Present"—
Letter on; by A. K. Keane 251

Mare Crisium, Sunset on the—
By E. Walter Maunder 60

Markwick, Colonel E. E., F.R.A.S.—
Letter on The Nebula N.G.C. 2237-9 Monocerotis 179

Martin, C. E.—
Letter on The Shooting of Rare Birds ... 38

Maunder, E. Walter, F.R.A.S.—
Comparative Photographic Spectra of the Brighter Stars 40
Sunset on the Mare Crisium 60
Wide Angle Photography in Astronomy ... 86
An Anglo-Saxon "Story of the Heavens" ... 106
The Zodiacal Coins of the Emperor Jahāngīr 155
Hippalus and its Surroundings 275

McPherson, Dr. J. G., F.R.S.E.—
The Energy of Röntgen Rays 148

Medals of the Royal Society—
Note on 13

Memory Without Reason—
Letter on; by C. Crouch 228

Meteors, The November, in 1898—
By Edward C. Pickering 39

Meteors, The November, of 1899—
By Edward C. Pickering 250

Microbes in Co-operation—
By G. Clarke Nuttall 151

Microscopy—
By John H. Cooke ... 22, 45, 70, 92, 118, 140, 165, 190, 214, 238, 261, 285

Mills, John, F.R.A.S.—
The Nervous System of our Empire ... 42

Mira Ceti—
Letter on; by Walter E. Besley 38
Letter on; by David Flanery ... 109, 253

XUM

PAGE

Monck, W. H. S.—
Letter on 61 Cygni 39
Letter on The Distribution of the Stars ... 179
Letter on The Sun's Radiant Heat 205
Letter on Suspected Variable Stars 252
Letter on Is the Stellar Universe Finite? ... 276

Moon, The "Seas" of the, What are they, and What is the Cause of their Obscure Appearance?—
By J. G. O. Tepper 251
Letter on; by Laurence B. Tappenden ... 277

Morley, George—
Customs of Shakespeare's Greenwood ... 90

Mosquitoes and Malaria—
By Percy H. Grimshaw 49
Note on 254

Mother-of-Pearl and its Sources—
By R. Lydekker 97

Mycetozoa, The, and Some Questions which they Suggest—
By Sir Edward Fry and Agnes Fry, 1, 56, 114, 161, 194, 241, 271

Naturalist, On the duty of a Field—
By E. A. S. E. 260

Nebula N.G.C. No. 1499 Persei, Photograph of the—
By Isaac Roberts 39

Nebula, The, N.G.C. 2237-9 Monocerotis—
Letter on; by E. E. Markwick 179

Nebulæ, Dark Rifts and Lanes in—
Letter on; by W. E. Wilson 206

Nebulæ Surrounding the Star D.M. No. 1848 Monocerotis, Photograph of—
By Isaac Roberts 249

Nebulous Region Round the Cluster N.G.C. No. 2239 Monocerotis—
By Isaac Roberts 132

Nervous System, The, of our Empire—
By John Mills 42

Noses, A Contrast in—
By R. Lydekker 174

Nuttall, G. Clarke, B.Sc.—
The Discoloration of Cut Apples 124
Microbes in Co-operation 151

Orchids, The Story of the—
By Rev. Alex. S. Wilson ... 149, 210, 259

Ornithological Notes, British—
Ages to which Birds live, On the Comparative—J. H. Gurney 63
Auk, Great, or Garefowl, Additional Notes on—Symington Grieve 14

PAGE

Auk, Great, Remains of, from Whitepark Bay, County Antrim—W. J. Knowles 42
Auk, Great, once an Irish Bird—R. J. Ussher ... 42
Birds of the Islands of Tiree and Coll, Observations on the—L. H. Irby 253
Black Grouse formerly an Irish Bird—G. E. H. Barrett-Hamilton 42
Bustard, Little, in Breeding Plumage—Thos. Southwell 41
Bustard, Macqueen's, in Aberdeenshire (*correction*)—H. F. W. 84
See also page 42
Buzzard, Common, and Domestic Fowl—Alan F. Crossman 14
Buzzard, Honey, at Peterhead—William Serle ... 14
Crake, Spotted, in County Down—"J. R." ... 14
Cranes in Norfolk—J. H. Gurney 134
Crossbill, Two-barred, in Sussex—N. F. Ticehurst... 278
Cuckoo, A Pet—Charles Campbell 14
Cuckoo in December—E. C. A. Byrom 41
Cuckoo, Young, ejecting young Meadow Pipit ... 278
Cuckoos in Winter in Devonshire—W. S. M. D'Urban 41
Duck, Tufted, Breeding of, in South-west Derbyshire—Francis C. R. Jourdain 253
Fire-Crested Wren in Breconshire—E. Cambridge Phillips 84
Flamingo in Merionethshire—G. H. Caton Haigh... 42
Fulmar Petrel Breeding in Noss, Shetland—Robert Godfrey 42
Fungoid Disease in Razorbill—T. H. Nelson ... 278
Golden-Crested Wren, Spring Immigration of the—John Cordeaux 158
Goshawk, Nesting of the, in Yorkshire—Thomas Southwell 63
Grouse, The Introduction of the Black, in Ireland—G. E. H. Barrett-Hamilton 63
Grouse, Red, and Bantam Hybrid—J. G. Millais ... 84
Hawfinch in County Dublin—J. Trumbull ... 42
Heron, Night, in Co. Wexford—G. E. H. Barrett-Hamilton 253
Hobby, The Food of the—Charles A. Witchell ... 278
Hybrids—Mallard and Pintail, and Red Grouse and Bantam 84
Increase and Decrease of Certain Species of Birds in the Tay Area—John Campbell 253
King-Eider in Shetland—J. E. Harting 84, 134
Linota exilipes (Coues) in Holderness—John Cordeaux 84
Mallard and Pintail Hybrid—H. A. Macpherson ... 84
Movements and Occurrence of Birds in Scotland during 1898, Report on—T. G. Laidlaw ... 229
"Nightingale Thrushes"—C. A. Witchell ... 158
Ospreys near London—J. E. Harting 14
Owl, European Hawk, in Aberdeenshire—G. Sim ... 42
Pastor, Rose-coloured, in Ireland—E. Williams ... 253
Phalarope, Grey, in Co. Armagh—Marsden ... 253
Pipit, Richard's, in Cumberland—H. A. Macpherson 63
Plover, Sociable, The Occurrence of the, in Ireland—Edward Williams 278
Ptarmigan, formerly an Irish Bird—G. E. H. Barrett-Hamilton 42
Razorbill, Fungoid Disease in—T. H. Nelson ... 278
Razorbill, Notes on the—Edward M'Canon ... 229
Remains of Birds from the Lake-Dwellings of Glastonbury—C. W. Andrews 229
Rook as an Egg-Stealer—Harry F. Witherby ... 133
Sandgrouse in Lincolnshire—John Cordeaux ... 133
Sandpiper, Buff-breasted, in Norfolk—E. C. Arnold 253
Sandpiper, Spotted, in Ireland—F. Curtis ... 134

PAGE

Ornithological Notes, British—

Sandpiper, Wood, in Co. Mayo 14
Sandpiper, Wood, in Co. Waterford—E. Williams... 253
Scaup-duck nesting in Scotland—J. A. Harvie-Brown 253
Shearwater, Great (*Puffinus major*)—Thos. Southwell 42
Shearwater, Levantine (*Puffinus yelkouanus*) near Scarborough—Howard Saunders 134
Shrike, Woodchat, a bird new to Ireland—R. M. Barrington 63
Snipe, Solitary, near Elgin—T. E. Buckley ... 42
Swallow, Arrival of—E. Sillence 133
Tern, Little, Construction of the Nest of the—Charles J. Patten 229
Thrush, Mistle, swallowing droppings of Young—George J. Chapman 178
Thrush, Mistle, swallowing droppings of Young—Arthur East 133
Tit's, The Marsh, Sense—Charles A. Witchell ... 278
Wagtail, Blue-headed, in Cumberland—H. A. Macpherson 229
Wagtails, White, at Bartragh, Co. Mayo—Robert Warren 229
Warbler, Barred, in Lancashire—W. Ruskin Butterfield 84
Warbler, Barred, in Lincolnshire—G. H. Caton Haigh 278
Warbler, Barred, in Oxfordshire—O. V. Aplin ... 63
Warbler, Icterine, in Norfolk—E. C. Arnold ... 253
Warbler, Radde's Bush (*Luscinia schwarzi*, Radde), in Lincolnshire—G. H. Caton Haigh 41
Warbler, Rufous, a bird new to Ireland—R. J. Ussher 63
Whitethroat, Lesser, in the Outer Hebrides—W. Eagle Clarke 134
Woodpecker, Greater Spotted, at Peterhead—William Serle 14
Woodpecker, Great Spotted, in Scotland... ... 42

Ozone and its Uses 5

Parr, W. Alfred—

Galileo's Tower at Florence 157

Patterson, Charles S., M.B., M.R.C.S., F.Z.S.—

Letter on; The Resources of the Sea ... 205

Photographic Telescope, A New Form of—

By Edward C. Pickering 85

Photography, Wide Angle, in Astronomy—

By E. Walter Maunder 86

Pickering, Edward C.—

Witt's Planet DQ 9
The November Meteors in 1898 39
The Planet Eros (DQ 433) 62
A New Form of Photographic Telescope ... 85
A New Star in Sagittarius 105
A New Satellite of Saturn 131
The New Algol Variable in Cygnus, + 45° 3062 177
The November Meteors of 1899 250

Pile Dwellings, Glastonbury—

Note on 253

PAGE

Quick, James—

Clouds 103

Rainfall, The Fluctuations of—

By Alex. B. MacDowall 54

Roberts, Isaac, D.Sc., F.R.S.—

Photograph of the Nebula N.G.C. No. 1499 Persei 39
Nebulous Region round the Cluster N.G.C. No. 2239 Monocerotis 132
Photograph of Nebulæ surrounding the Star D.M. No. 1848 Monocerotis 249

Röntgen Rays, The Energy of—

By Dr. J. G. McPherson 148

Sagittarius, A New Star in—

By Edward C. Pickering 105

Saturn, A New Satellite of—

By Edward C. Pickering 131

Saturn, Considerations on the Planet—

By E. M. Antoniadi 9

Science Notes 12, 36, 64, 83, 109, 132, 157, 178, 228, 253, 278

Scientific Thought, The Need for a Better Interchange of—

Letter on; by Howard Little 108

Sea, The Resources of the—

Letter on; by Charles S. Patterson ... 205

Shakespeare's Greenwood, Customs of—

By George Morley 90

Shells as Ornaments, Implements, and Articles of Trade—

By R. Lydekker 242

Sky, The Face of the—

By A. Fowler ... 23, 47, 71, 94, 119, 142, 167, 191, 214, 239, 263, 287

Sound Reflexion and Refraction—

By Rev. John M. Bacon 193

Spectra, Comparative Photographic, of the Bright Stars—

By E. Walter Maunder 40

Sponges and the Sponge Trade—

By R. Lydekker 145

(Star), The New Algol Variable, in Cygnus, + 45° 3062—

By Edward C. Pickering 177

Stars, Distribution of, in Space—

By Gavin J. Burns 152
Letter on; by J. E. Gore 180
Letter on; by Gavin J. Burns 227

PAGE

Stars, The Distribution of the—
Letter on; by W. H. S. Monck 179

Stars, Variable—
Letter on; by David Flanery 17

Stars, Variable, Some Suspected—
By J. E. Gore 176, 200, 233
Letter on; by T. W. Backhouse 227
Letter on; by W. H. S. Monck 252

Stebbing, Rev. Thomas R. R., M.A., F.R.S., F.L.S.—
The Karkinokosm, or World of Crustacea.
VII. The Box Crustacea 29
VIII. The Door-shell Crustacea 87
IX. La Dignité du Chez-soi 137
X. Weapons and Wiles 171
XI. Taste and Try 224
XII. A Breath of Water 282

Steele, A. B.—
Fairy Rings 197

Stellar Universe, Is the, Finite—
By Gavin J. Burns 248
Letter on; by W. H. S. Monck 276

Sun's, The, Radiant Heat—
Letter on; by W. H. S. Monck 205

Sunspot Minima, London Summers near—
By Alex. B. MacDowall 209

Sunspot Period, The—
Letter on; by William Godden 18

Tappenden, Laurence B.—
Letter on The Seas of the Moon 277

Tepper, J. G. O.—
The "Seas" of the Moon, what are they, and what is the cause of their obscure appearance? 251

Thomson, Arthur, M.A., M.B.—
On the Treatment and Utilization of Anthropological Data.
I. Colour 25
II. The Hair 73
III. Racial Proportions 125
IV. Height 169
V. Cranial Form 217
VI. Facial Form 266

PAGE

Wagstaffe, W. W., B.A., F.R.C.S.—
Ups and Downs in our Daily Weight ... 247

Webb, Wilfred Mark, F.L.S.—
Recent Work of the United States Biological Survey 254

Weight, Our Daily, Ups and Downs in—
By W. W. Wagstaffe 247

Weschè, Walter—
The Ovipositor of a Beetle (*Baptolinus alternans*) and the Teeth of the Dung Fly ... 18
The Teeth on the Labella of the Blow Fly 164

Wheat Problem, Sir William Crookes'—
Note on 13

Wheat, Produce of, in Great Britain—
Note on 36

Wilson, Rev. Alex. S., M.A., B.Sc.—
The Story of the Orchids 149, 210, 259

Wilson, W. E.—
Letter on; Dark Rifts and Lanes in Nebulæ 206

Wireless Telegraphy—
By J. M. 137

Witchell, Charles A.—
The Bad Language of Wild Birds 28
The Love-Gifts of Birds 76
Letter on the Love-Gifts of Birds 109

Witherby, Harry F., F.Z.S., M.B.O.U.—
Two Months on the Guadalquiver.
I. The River 6
II. The Marismas 51
III. Reeds and Rushes 183
IV. Scrub and Wood 222
V. Flowery Plains and Bustards. List of Birds obtained and observed ... 272

Wolf, Joseph—
Obituary Notice of 136

Zoological Society for Brighton—
Note on 64

INDEX OF THE PRINCIPAL ILLUSTRATIONS.

PAGE

cac a catechu, Microphotograph of 285

Atmospheric Corona, Triple ... 67

Auks, Little 281

Basalt, Cut Surface of 33

Beetle, Ovipositor of (*Baptolinus alternans*) 19

Ben Nevis—

Ordnance Cairn and Observatory on the Summit of 199

Observatory from the South ... 199

Observatory from the South-East: Winter 231

Fog Crystals covering Tower and Instruments 232

Buzzard, Common, and Domestic Fowl 14

Coinage, Zodiacal, of the Emperor Jahāngīr—

(Full-page Photographic Plate)—Gold Mohurs minted at Agrah; Silver Rupees minted at Ahmadabad 156

Clouds, Classification of—

Stratus; Cumulo-Nimbus; Alto-Cumulus; Cirrus (full-page Plate) 103

Cloud Photographs—

"Mare's Tail" Cloud; "Mackerel Sky" 202

Stratus; Small Cumuli during fine summer weather 203

Rain-Clouds; Rainbow seen at Juvisy; Scud drifting before a grey sheet of Cirro-Stratus ... 204

Large Thunder-Storm Cumulus; Light Cirro-Cumulus in the Upper Regions, with Stratus in the foreground (full-page Photographic Plate) 202

Earthquake, Map of Area affected by the Hereford 122

Flamingo, The Dead 54

Flamingoes 53

Flint, Microscopic Section of ... 130

Fly, Teeth of Blow, magnified 170 Diameters 165

Fly, Dung—

Proboscis, Lancets, and Maxillary Palpi of (*Scatophaga stercoraria*); Teeth of Fly; Clasper of Fly; Part of Tibia and Tarsi of Fore-leg of Fly, showing spines used in holding prey 19

Fog-producing Apparatus 104

PAGE

Galileo's Tower at Florence—

The Torre del Gallo, Florence; Museum in the Torre del Gallo 157

Gneiss, Microscopic Section of ... 237

Hair, The—

Section through scalp of a Bushman, showing curved hair follicles 74

Photomicrograph of section through hair follicle 74, 75

Longitudinal section through hair follicle 75

Straight hair, curved hair (Bushman), straight hair erected by action of muscle... 75

Sections showing appearance of the hair follicles in the scalps of races with straight, wavy, and curly hair 76

Hippalus and its Surroundings (full-page Photographic Plate)... ... 275

Icknield Way in Norfolk and Suffolk—

"Chunk Harvey's Grave," Thetford 44

Bridge over the Thet at Thetford... 44

The Green Lane, near Thetford ... 45

"Japan Ear," Outer Surface of ... 99

Karkinokosm, The, or World of Crustacea—

Polycope orbicularis Sars, lateral and dorsal views... 29

Eucytherura gibbera, lateral and dorsal views 30

Astérope, Body of an, without the valves 30

Mandible of *Megalocypris princeps* 31

Astérope, Mandible of; Brushing feet of; Annular cleansing foot of 31

Tubicinella trachealis Shaw, in skin of Right Whale 88

Lepas anatifera Linn. 88

Nauplius of *Lepas anatifera* ... 89

Cypris-stage of *Lepas australis* ... 89

Scalpellum tritonis Hoek... ... 90

Pleurocrypta marginata Sars ... 138

Pagúrus arrosor (Herbst) ... 138

Pylochéles Agassizii A. Milne-Edwards 139

The same in a hollow stone ... 139

Xylopagúrus rectus A. Milne-Edwards 139

Cerapus abditus Templeton, emerging from its tube 140

Spirontocaris spinus (Sowerby) ... 172

Raptorial Claw of *Squilla raphidea* Fabricius 172

Parthenope horrida (Linn.) ... 173

Lambrus carinatus Milne-Edwards 173

Oreóphorus reticulatus 173

PAGE

Arctic Shrimp, natural size, *Sclerocrangon ferox* Sars; Oriental River Prawn, natural size, *Palæmon lar* Fabricius (full-page Plate) 224

Phrosina semilunata, Risso ... 225

Second Gnathopod of Amphipod, *Pardalisca abyssi* Boeck ... 283

Branchial Plume, seen in section, of Deep-Sea Prawn, *Plesiopenæus armatus* Bate 283

A Schizopod, *Nematoscelis megalops* Sars 284

Branchiæ of *Nematoscelis megalops*, more highly magnified 284

Lungfish, Figure of 208

Mare Crisium, Sunset on the (full-page Photographic Plate) 61

Marismas, Our Camp on the... ... 52

Mars, Oppositions of 23

Mercury as a Morning Star (Diagram) 215

Meteorite, Cut Surface of 32

Moon's Path through the Earth's Shadow 287

Mycetozoa, The—

Badhamia utricularis, showing Sporangia... 1

Badhamia utricularis, broken Sporangia showing Capillitium... 2

Swarm Spores 2

Streaming plasmodium of *Didymium leucopus* 3

Cribraria aurantiaca 115

Arcyria punicea 115

Group of Sporangia 116

Group of Sporangia and Plasmodiocarps 116

Section of mature æthalium ... 116

Plasmodium turning into Sporangia 116

Empty Sporangia 117

Elaters and Spores of *Trichia varia* 161

Capillitium of *Stemonitis fusca* ... 161

Pedicels and Capillitia of *Comatricha obtusata* 162

Ceratomyxa mucida, magnified ... 194

Ceratomyxa mucida. Plasmodium 195

Ceratomyxa mucida. Development of Spores 195

Ceratomyxa mucida. Eight Protoplasts 195

Dictyostelium mucoroides. Section 195

Pseudo-plasmodium of *Polysphondylium violaceum* 196

Immature Sporangium of *Polysphondylium violaceum* 196

Ripening of Sporangium of *Polysphondylium violaceum* 197

PAGE

Nebula N.G.C. 1499 Persei (full-page Photographic Plate by Dr. Isaac Roberts) 39

Nebula N.G.C. 2237-9 Monocerotis (full-page Photographic Plate by Dr. Isaac Roberts) 132

Nebulæ in Monoceros, New (full-page Photographic Plate by Dr. Isaac Roberts) 250

Necklace made from the Virgin Cone 243

Noses, A Contrast in—
(The Proboscis Monkey and the Snub-nosed Monkey) (full-page Plate) 174

Orchids, The Story of the—
Spike of Early Purple Orchis ... 149
Floral Diagrams: Lily, Orchis, Cypripedium 150
Diagrammatic section of Orchid ... 150
Habenaria; Epipactis; Listera . 210
Cypripedium barbatum 211
Section through Labellum of Slipper Orchid 211
Pterostylis 211
Catasetum: in front and section... 259
Coryanthes speciosa 259
Angraecum sesquipedale 259

Oyster, Commercial Pearl 98

Planets, The Morning, in February 47

Platypus, Figure of Duck-billed ... 207

Proportions of some Races, Graphic Representation of the 127

PAGE

Rainfall Curves... 55

Saturn—
1898, September, 13d. 6hr. 40m., G.M.T. (full-page Plate) ... 10
Irradiation and Contrast Effects in the Shadow of, 1890, May 26 ... 10
Amphitheatrical gradations seen on the inner bright ring of, on April 18, 1896 11
Duskiness of shadow of outer ring of; 1894, July 4... 12
Probable constitution of the Crape Ring of 12

Saturn's Dark Polar Cap, 1895, August 9 10

Skin—
Human, Photomicrograph of section through 26
Negro's, Photomicrograph of section through 27

Skull, The Human—
Size and cranial capacity 218
Varieties of form 219
Skulls, with large, medium, and small teeth 266
Skulls showing varying degree of projection of upper jaw... ... 267
Skulls showing three types of nasal aperture 267

Sky, One-thirtieth of the (full-page Photographic Plate) 87

PAGE

Sponges and the Sponge Trade—
Fine glove-sponge 145
Grass-sponge 147
Yellow sponge 147
Wool-sponge 147
Velvet-sponge 148

Spoon made from the Shell of a Melon-volute... 245

Stalking-Horse, The Use of—
Stalking in the *Marismas*; the Stalker from the Bird's Point of View 6
About to turn the Horse; Turning the Horse 7
Tying the Horse's Head to Tail; The Shot 8

Stars of Equal Intrinsic Brightness as actually seen 154

Stellar Universe, Section through the 153

Stilt's Nest slightly built on Dry Ground 185

Stilt's Nest strongly built in Wet Ground 184

Tern, Floating Nest of Whiskered ... 183

"Turbo" of the Mother-of-Pearl Trade 100

Weight, Average of Daily Variation in Body (Diagram) 248